GEORGIA ROADS

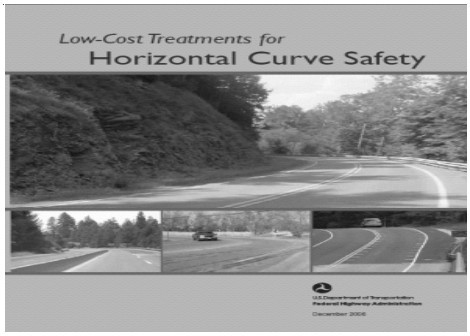
LTAP

Better Roads Through Cooperation

A newsletter of Georgia's Local Technical Assistance Program Vol. 17, No. 2 Winter 08

Route To:

Inside



Low Cost Treatments for Horizontal Curve Safety

According to the National Cooperative highway Research Program, nearly 25 percent of people who die each year on the Nation's roadway are killed in vehicle crashes at curves. About 75 percent are on two-lane secondary highways, many of which are local roads. Furthermore, the average crash rate for horizontal curves is about three times that of other highway segments. And, 76 percent of the curve-related fatal crashes involve single vehicles leaving the roadway and striking trees, utility poles, rocks, or other fixed objects or overturning. Another 11 percent are head-on crashes, that result of one vehicle drifting into the opposing lane when a driver tries to cut the curve or redirect the vehicle after having run onto the shoulder. It is because of these dramatic statistics that the Federal highway Administration (FHWA) has identified Roadway Departure as one of it three programs emphasis areas and it is one of the 22 emphasis areas of the Strategic Safety Plan prepared by AASHTO. One aspect of the Roadway Departure initiative is to develop a series of practical information publications designed for local roads agencies. Hence, A Guide for Reducing Collisions on Horizontal Curves, illustrates the problem and identifies 20 strategies as alternative countermeasures - or treatments- to address the specific safety problem at horizontal curves. This publication was prepared to provide practical information on low-cost treatments that can be applied at horizontal curves to address identified or potential safety problems. The publication concisely describes the treatment; shows examples; suggests when the treatment might be applicable; provides design features; and where available, provides information on the potential safety effectiveness and coast. The treatments include: Basic traffic signs and markings found in the MUTCD- Enhanced traffic control devices- additional traffic control devices not found in the MUTCD- Rumble strips- Minor roadway improvements- Innovative and experimental treatments- and concludes with a description of maintenance activities that should be conducted to keep the treatments effective. Copies of the publication are now available from the FHWA Report Center, on-line and for download in PDF.

http://safety.fhwa.dot.gov/roadway_dept/pubs/sa07002/index.htm.

Georgia Roads

David Moyer, P.E., Program Director
Beverly Fontenot, Program Training Coordinator II
Adele Samuel, Program Assistant

Address
GDOT, LTAP
276 Memorial Drive, S.W.
Atlanta, GA 30303

The Local Technical Assistance Program (LTAP) is a nationwide effort financed jointly by the Federal Highway Administration and individual state departments of transportation and/or universities. Its purpose is to disseminate the latest state-of-the-art technologies in the areas of roads, highways and bridges to municipal and county highway and transportation personnel.

The Georgia LTAP is supported by FHWA and the Georgia Department of Transportation. The Georgia Roads Newsletter is one of the LTAP activities. The opinions, findings or recommendations expressed in this newsletter are those of the Georgia LTAP Center and do not necessarily reflect the views of the FHWA nor the Georgia Department of Transportation.

The Georgia Roads Newsletter is distributed free of charge to counties, cities, towns and others with transportation responsibilities.

L T A P Resources

Videos:

1) Commercial Driver Certification- A License To Drive
2) Commercial Driver Certification- Combination Vehicles and Endorsements
3) Flagging- You're The Director
4) Preventive Maintenance- Project Selection0Right Road Right Treatment- Right Time

DVDs

1) "Defensuve Flagging: A Survivor's Guide"-In Spanish
2) "Anti-icing/RWIS Training"

Publications:

1) Defensive Flagging - A Survivor's Guide

2) Para Banderear A La Defensiva- Una guia para sobrevivientes

ADVERSE WEATHER CONDITONS

Adverse weather conditions have a major impact on the safety and operation of our Nation's roads, from signalized arterials to Interstate highways. Weather affects driver behavior, vehicle performance, pavement friction, and roadway infrastructure. Weather events and their impacts on roads can be viewed as predictable, nonrecurring incidents that affect safety, mobility and productivity. Weather affects roadway safety through increased crash risk, as well as exposure to weather-related hazards. Weather impacts roadway mobility by increasing travel time delay, reducing traffic volumes and speeds, increasing speed variance (i.e., a measure of speed uniformity), and decreasing roadway capacity (i.e., maximum rate at which vehicles can travel). Weather events influence productivity by disrupting access to road networks, and increasing road operating and maintenance costs.

How Do Weather Events Impact Roads?

Weather acts through visibility impairments, precipitation, high winds, and temperature extremes to affect driver capabilities, vehicle performance (i.e., traction, stability and maneuverability), pavement friction, roadway infrastructure, crash risk, traffic flow, and agency productivity. The table below, summarizes the impacts of various weather events on roadways, traffic flow, and operational decisions.

Weather Impacts on Safety

On average, there are over 6,400,000 vehicle crashes each year. Twenty-four (24) percent of these crashes—approximately 1,561,000—are weather-related. Weather-related crashes are defined as those crashes that occur in adverse weather (i.e., rain, sleet, snow, and/or fog) or on slick pavement (i.e., wet pavement, snowy/slushy pavement, or icy pavement). Nearly 7,400 people are killed and over 673,000 people are injured in weather-related crashes each year. (Source: *Eleven-year averages from 1995 to 2005 analyzed by Noblis, based on NHTSA data*).

· Most weather-related crashes happen on wet pavement and during rainfall. Seventy-five (75) percent of weather-related crashes occur on wet pavement. Fortyseven (47) percent happen during rainfall. Fifteen (15) percent of weather-related crashes happen during snow or sleet. Thirteen (13) percent occur on icy pavement. Eleven (11) percent of weather-related crashes take place on snowy or slushy pavement. Only two (2) percent happen in the presence of fog. (Source: *Eleven-year averages from 1995 to 2005 analyzed by Noblis, based on NHTSA data*)

· "Weather-Related" crashes are those that occur in the presence of adverse weather and/or slick pavement. (Source: *Eleven-year averages from 1995 to 2005 analyzed by Noblis, based on NHTSA data)*.

Each year 17 percent of fatal crashes, 22 percent of injury crashes, and 25 percent of property-damage-only crashes occur in the presence of adverse weather and/or slick pavement. That is, nearly 6,600 fatal crashes, nearly 450,000 injury crashes and nearly 1,104,900 property-damage-only crashes in adverse weather or on slick pavement annually. (Source: *Eleven-year averages from 1995 to 2005 analyzed by Noblis, based on NHTSA date)*.

Weather Impacts on Mobilty

Capacity reductions can be caused by lane submersion due to flooding and by lane obstruction due to snow accumulation and wind-blown debris. Road closures and access restrictions due to hazardous conditions (e.g., large trucks in high winds) also decrease roadway capacity. Weather events can reduce arterial mobility and reduce the effectiveness of traffic signal timing plans. On signalized arterial routes, speed reductions can range from 10 to 25 percent on wet pavement and from 30 to 40 percent with snowy or slushy pavement. Average arterial traffic volumes can decrease by 15 to 30 percent depending on road weather conditions and time of day. Saturation flow rate reductions can range from 2 to 21 percent. Travel time delay on arterials can increase by 11 to 50 percent and start-up delay can increase by 5 to 50 percent depending on severity of the weather event. (Sources: *"·Weather Impacts on Arterial Traffic Flow* " and "·*Weather-Responsive Traffic Signal Control*)

On freeways, light rain or snow can reduce average speed by 3 to 13 percent. Heavy rain can decrease average speed by 3 to 16 percent. In heavy snow, average freeway speeds can decline by 5 to 40 percent. Low visibility can cause speed reductions of 10 to 12 percent. Free-flow speed can be reduced by 2 to 13 percent in light rain and by 6 to 17 percent in heavy rain. Snow can cause free-flow speed to decrease by 5 to 64 percent. Speed variance can fall by 25 percent during rain. Light rain can decrease freeway capacity by 4 to 11 and heavy rain can cause capacity reductions of 10 to 30 percent. Capacity can be reduced by 12 to 27 percent in heavy snow and by 12 percent in low visibility. Light snow can decrease flow rates by 5 to 10 percent. Maximum flow rates can decline by 14 percent in heavy rain and by 30 to 44 percent in heavy snow. (Sources: "*Highway Capacity Manual 2000*" Chapter 22, "*Capacity-Reducing Occurrences*", "*Driver Response to Rainfall on an Urban Expressway*", "*Impact of Weather on Urban Freeway Traffic Flow Characteristics and Facility Capacity*", *Empirical Studies on Traffic Flow in Inclement Weather: Summary Report*").

Continue on next page

continue from previous page

ADVERSE WEATHER CONDITONS

It has been estimated that 23 percent of the nonrecurrent delay on highways across the nation is due to snow, ice, and fog. This amounts to an estimated 544 million vehicle-hours of delay per year. Rain—which occurs more frequently than snow, ice, and fog—leads to greater delay. During adverse weather average travel time delay increases by 14 percent in Washington, D.C. and by 21 percent in Seattle, WA. During peak periods in Washington, D.C. travel time increases by roughly 24 percent in the presence of precipitation. (Sources: " *Highway Capacity Manual 2000" Chapter 22,* "· *Temporary Losses of Highway Capacity and Impacts on Performance"*, " ·*An Investigation into the Impact of Rainfall on Freeway Traffic Flow*" and "·*Analysis of Weather Impacts on Traffic Flow in Metropolitan Washington DC"*).

Weather Impacts on Productivity

Adverse weather can increase operating and maintenance costs of winter road maintenance agencies, traffic management agencies, emergency management agencies, law enforcement agencies, and commercial vehicle operators (CVOs).

Winter road maintenance accounts for roughly 20 percent of state DOT maintenance budgets. Each year, state and local agencies spend more than 2.3 billion dollars on snow and ice control operations. (Sources: *"Highway Statistics Publications, Highway Finance Tables SF-4C and LGF-2," 1997 to 2005,* *http://www.fhwa.dot.gov/policy/ohpi/hss/hsspubs.htm*)

Each year trucking companies or CVOs lose an estimated 32.6 billion vehicle hours due to weather-related congestion in 281 of the nation's metropolitan areas. Nearly 12 percent of total estimated truck delay is due to weather in the 20 cities with the greatest volume of truck traffic. The estimated cost of weather-related delay to trucking companies ranges from 2.2 billion dollars to 3.5 billion dollars annually. (Source: " *Analysis of Weather Incident Effects on Commercial Vehicle Mobility in Large U.S. Cities," Mitretek Systems*).

New LTAP Director

The Georgia LTAP is pleased to welcome aboard our new Director, Mr. David Moyer, P.E. While new to the LTAP community, David is no stranger to GDOT. He previously was the Area Engineer for Area Four, in Fitzgerald Georgia. David's background in construction and design will be a valuable asset to the Center. WELCOME DAVID.

New changes to WECS Certification Training

2008 brings a change to the Worksite Erosion Control Supervisor (WECS) Certification Training. According to the program manger, Mr. James Magnus, "we are making a total revision to the program. We are trying to focus on the WECS and their responsibilities. We are answering the who, what, when, where, why, and how of the plan, inspections, maintenance, the permit, and grassing. We have added instruction in areas we have not done so before. Areas such as , how to perform an inspection, and how to review an inspection report. We have even added a section on utilities". The training is still one day, but has increased from 4 hours to 6 hours. The course fee is now $100.00 for contractors and consultants. This course is for individuals listes as the WECS on GDOT projects. For more information contact David Moyer at 404 656-4664 or david.moyer@dot.state.ga.us.

Calendar of Events

Date	Event	Location
February		
13-14	Chain Saw Safety - "Hands On"	Clarke County
15	Small Engineer Repair	Clarke County
19	APWA Equipment Show	Perry, Fair Ground
March		
5-6	Chain Saw Safety- "Hands On"	TBD
7	Chain Saw Safety - Demo	City of Powder Springs
11-12	Traffic Engineering Fundamentals	Altamaha Tech, Jesup GA
April		
14	Gravel Roads-Motor Grader	GDOT Macon Area Office
15	Surveying For Highway Personnel	GDOT Macon Area Office
16	Advanced Surveying	GDOT Macon Area Office
17	Bridge Inspection	GDOT Macon Area Office
20-24	NACE Convention	Portland, OR
26-28	ACCG County Buyers Mart	Savannah
29-30	Traffic Engineering Fundamentals	GDOT Macon Area Office
May		
1	Product Demonstration Showcase - Prefabricated Bridge Element and Design	LaGrange, GA
22-23	Road Safety Audit	TBD
28	Zero Turn	TBD
29	Chain Saw Safety - Demo	City of Rome, GA
30	Chain Saw Safety - Demo	TBD
June		
21-24	GMA Annual Convention	Savannah

To register for a class contact Beverly Fontenot at 404-463-7886 or beverly.fontenot@dot.state.ga.us.

REMEMBER WE HAVE TWO TAILGATE TRAINERS HERE TO ASSIST YOU WITH YOUR TRAINING NEEDS, JUST GIVE US A CALL.

cont. from previous page

Georgia Department of Transportation and Georgia Counties Fact Sheet

Counties are responsible for the majority of the transportation infrastructure in Georgia. To successfully maintain that infrastructure, counties rely on a strong partnership with the State of Georgia and, in particular, the Georgia Department of Transportation.

County Financial Investments

Unlike the state, counties do not directly receive any user fee income, such as motor fuel tax or toll revenues. Instead they rely on local property taxes, sales taxes and other general fund revenues to fund transportation needs. The largest source of funding for transportation improvements at the county level is SPLOST. From 1998 to 2006, counties spent nearly 40% of all SPLOST revenues - more than $2.7 billion - on transportation projects.

Mileage of Public Roads in Georgia by Surface Type

	Total	% Total	Unpaved	Paved	VMT (2004)
State Routes	18065.69	16%	0.81	18064.88	64%
County Roads	84117.71	72%	28118.68	55999.03	29%
City Streets	14502.01	12%	487.51	14014.50	7%
State Total	116987.47	100%	28800.50	88186.97	100%

**Source: GDOT 441 Report, 2006; Governor's Task Force on Local Transportation Strategies Report, 2004*

Other County Transportation Investments

Bridges: As of 2005, counties owned 7,798 bridges. 2,009, or 26%, are classified by GDOT as structurally deficient or functionally obsolete. In addition, counties own more than 10,000 drainage structures.

Airports: Counties own or jointly own 69 of the 103 publicly-owned airports in Georgia.

Transit: 103 counties have active rural transit programs. 15 counties and cities have active urban transit programs.

Other: Rail, sidewalks, trails, bike paths, ports/waterways

State Financial Support

County/City Contract (State Aid)
- -Counties are responsible for all costs related to R/W, utilities,and material pits.
- -Counties carry out all surveys, design, permits, and maintenance.
- -GDOT provides construction supervision and approx. 60% of the construction cost.

Bridge Replacement and Rehab (State Aid)
- -GDOT provides equipment loans, materials, repairs and replacement.
- -Follows the match required under county contracts or may be 100% federally funded.

Local Assistance Road Program (LARP)
- -Counties are responsible for R/W, utility adjustments, patching, shoulder buildingand other costs.
- -LARP funds can only be use to pay for resurfacing.

State Airport Aid Program
- -Requires at least a 25% local match for state funds and a 2.5% match for federal.
- -Provides pavement maintenance and capital improvement funds.

cont. next page

Freight Rail Rehabilitation

-GDOT preserves rail service to smaller communities with industry at risk.

Public Transit Funds

-GDOT provides limited state financial support to transit operations, acting primarily as a conduit for federal 3037, 5307, 5309, and 5311 funds.

Grant Administration

-The department administers several federal grant programs that benefit local governments, including Transportation Enhancement (TE) grants and off-system safety program grants ($1 million per district in 2007).

State Technical and Resource Support

Bridge Inspections

-Every two years, per federal law, GDOT inspects all county bridges and issues a report.

Local Technical Assistance Program (LTAP)

-LTAP offers technical advice, training, and products to county public works and road department employees. Other department programs also provide PDP and other training.

Maps

-GDOT provides traffic counts, data and mapping services to local governments.

Materials and Equipment

-Through the Asphalt Agreement Program, local government can buy asphalt from GDOT. This counts against any state aid allotment.

-If available, the department provides surplus materials, such as guard rails, bridge beams, traffic signal equipment at reduced or no cost.

-Local governments may borrow heavy equipment and order signage off state contracts.

Road Striping Program

-GDOT maintenance crews will stripe local roads at a reduced price.

Transportation Planning

-GDOT provides assistance with funding and conducting local transportation studies.

-GDOT performs a rural consultation process designed to incorporate local priorities in statewide transportation planning documents.

Work Zone Safety

-ACCG participates with GDOT, OSHA and a number of other partners in an alliance to promote the safety of road employees on the job.

Questions? Comments, Need help?
Just give us a call at 404 656-4664
or 1-800 573-6445

Georgia LTAP Fax Back Form

We are in the process of updating our database and it's vital that we have current contact information for those who participate in this program so we can send you our newsletter and relevant workshop announcements. Please take the time and use this form to add, delete or modify your contact information. You can fax this form back to our office at 404 463-3564 or you can mail the completed form to Georgia LTAP, 276 Memorial Drive, SW, Atlanta, GA 30303.

PLEASE HELP US OUT AND COMPLETE THIS FORM.

☐ City ☐ County ☐ State ☐ Federal ☐ Contractor/Consultant

Name: Title:

Organization:

Address:

City/State: Zip:

Phone: Fax:

Email:

Please select all that apply:

☐ Please Add me to your mailing list

☐ Please Remove me from your mailing list

☐ Please correct my information as indicated above

☐ Please send materials in hard copy only

Thank you so very much

Final Rule Maintaining Sign Reflectivity Published

Announcement of Final Rule: Revision 2 of the 2003 Manual on Uniform Traffic Control Devices (MUTCD) was published in the Federal Register on December 21, 2007, and will become effective on January 22, 2008. The second revision of the 2003 MUTCD introduces new language establishing minimum retroreflectivity levels that must be maintained for traffic signs. The final rule provides additional requirements, guidance, clarification, and flexibility in maintaining traffic sign retroreflectivity that is already required by the MUTCD. The minimum retroreflectivity levels and maintenance methods consider changes in the composition of the vehicle population, vehicle headlamp design, and the demographics of drivers. The (Federal Highway Administration) FHWA expects that the levels and maintenance methods will help to promote safety and mobility on the nation's streets and highways Minimum Maintained Retroreflectivity.

The opening statement of the MUTCD in Section 1A.01 defines the purpose of traffic control by providing for the orderly movement of all road users. Those devices notify road users of regulations, provide warning, and give guidance needed for the safe, uniform, and efficient operation of all elements of the traffic stream. Traffic signs provide important information to drivers at all times, both day and night. To be effective, their visibility must be maintained. The latest edition of the MUTCD, the 2003 edition, continues to address the visibility of signs. Three pertinent section include: Section 2A.09, Maintaining Minimum Retroreflectivity, Section 2A.08 Retroreflectivity and Illumination, which states, "regulatory, warning and guide signs shall be retroreflective or illuminated to show the same shape and similar color by both day and night, unless specifically stated otherwise in Section 2A.22 Maintenance, which address maintenance of traffic signs. These MUTCD provisions have tasked each agency with actively managing its traffic signs and ensuring that its traffic signs are performing as they are intended. The new standards in Section 2A.09 requires that agencies maintain traffic signs to a minimum level of retroreflectivity outlined in Table 2A-3 of the MUTCD. Agencies have until January 2012, to establish and implement a sign assessment or management method to maintain minimum levels of sign retroreflectivity. The compliance date for regulatory, warning, and ground-mounted guide signs in January 2015. For overhead guide signs and street name signs, the compliance date is January 2018.

The MUTCD describes two basic types of methods that agencies can use to maintain sign retroreflectivity at or above the MUTCD minimum maintained retroreflectivity levels- assessment method and management methods. The FHWA has identified and listed assessment and management methods for maintaining sign retroreflectivity in accordance with Section 2A.09. A full report on these methods can be found at www.fhwa.dot.gov/retro. Table 2A-3 in the MUTCD does not imply that an agency must measure the retroreflectivity of every sign. Rather, the new MUTCD language describes five methods that agencies can use to maintain traffic sign retroreflectivity at or above the minimum levels. Agencies can choose from these methods or combine them. Agencies are allowed to develop other appropriate methods based on engineering studies. However, agencies should adopt a consistent method that produces results that correspond to the values in Table 2A-3. The FHWA believes that this proposed changes will promote safety while providing sufficient flexibility for agencies to choose a maintenance method that best matches their specific conditions.

Do you wish to continue receiving Georgia Roads? *(Please check the appropriate box)*

____ Yes!
____ Yes, but update my name and address as shown below.
____ Yes, and add the following name and address to your mailing list (include a sheet for additional names)
____ No. Remove my name and address from your mailing list (provide your name and address below)

Signature: _____
Name: _____
Local Government Name: _____
Address: _____
City, State, Zip: _____

About the content of Georgia Roads. . .

I find the writing to be (check one below):

____ too technical
____ not technical enough
____ at the technical level I want

I rate the appearance to be (check one below):

____ visually appealing
____ not clear enough
____ visually appealing and clearly defined

Rank the following subject areas from 1-6 in order of importance (1 being the most important) to you:

____ research
____ technology and engineering
____ innovative ideas
____ APWA membership news
____ maintenance tips
____ questions and opinions

I feel this newsletter (check all that apply):

____ keeps readers up-to-date on innovation, technology and maintenance
____ provides me with useful information of local interest
____ provides me with information useful in my job

What can LTAP do to better meet your needs as a reader? _____

_____

Please Fax completed survey to 404.463.3564

Georgia Department of Transportation
Local Technical Assistance Program
276 Memorial Drive
Atlanta, GA 30303

Sponsors:
Georgia Department of Transportation
U.S. Department of Transportation
Federal Highway Administration

Georgia Roads

is a technical newsletter about local roads published by the Georgia Department of Transportation Local Technical Assistance Program. It is written for Georgia's municipal and county employees who are responsible for planning and managing rural roads. All of your comments, questions, and suggestions are welcome. Please call us toll free at 1.800.573.6445.